

PROVIDER PERSPECTIVES ON THE ACCESSIBILITY AND AFFORDABILITY OF
HEARING HEALTHCARE IN ARIZONA

by

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As members of the Audiology Doctoral Project Committee, we certify that we have read the Audiology Doctoral Project prepared by Giau Le, titled *Provider Perspectives on the Accessibility and Affordability of Hearing Healthcare in Arizona* and recommend that it be accepted as fulfilling the Audiology Doctoral Project requirement for the Degree of Doctor of Audiology.

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TABLE OF CONTENTS

ABSTRACT	7
CHAPTER 1: INTRODUCTION	9
<i>Literature Review</i>	<i>10</i>
CHAPTER 2: METHODOLOGY	11
<i>Quantitative Data Collection (Survey)</i>	<i>11</i>
<i>Qualitative Data Collection (Focus Groups)</i>	<i>14</i>
CHAPTER 3: RESULTS AND DISCUSSION	
<i>Quantitative Data</i>	<i>16</i>
<i>Qualitative Data</i>	<i>21</i>
<i>Discussion</i>	<i>30</i>
<i>Future Direction</i>	<i>33</i>
REFERENCES	34

FIGURES & TABLES

<i>Table 1: Focus group location, date, and number of attendees</i>	14
<i>Figure 2: Distribution of participants as a function of occupation</i>	16
<i>Figure 3: Proportion of survey participants from various Arizona counties</i>	17
<i>Figure 4: Survey participants grouped by practice location.....</i>	17
<i>Figure 5: Should AHCCCS (Medicaid) cover hearing aids in Arizona?</i>	18
<i>Figure 6: Amount of pro-bono work per month</i>	18
<i>Figure 7: Motivators for participation from hearing healthcare providers</i>	19
<i>Figure 8: Factors deterring hearing healthcare provider participation</i>	19
<i>Figure 9: Preferred patient load</i>	20
<i>Figure 10: Average compensation as a function of patient load</i>	20
<i>Figure 11: Preferred monetary compensation</i>	20
<i>Figure 12: Provider preferences to increase affordability and accessibility.....</i>	21
<i>Table 2: Attributes, dimensions, and definitions of provider opinions</i>	22

ABSTRACT

Hearing loss negatively affects the lives of millions of Americans (Lin, Niparko, & Ferrucci, 2011). Amplification can enhance audibility and in turn improve quality of life (Mulrow et al., 1990). Yet it is estimated that only 20% of those who would benefit from amplification in the United States actually utilize it (Chien & Lin, 2012).

Discomfort and insufficient value have been cited as reasons for low uptake as well as low motivation, negative attitudes towards hearing aids, and lack self-perceived handicap (McCormack & Fortnum, 2013; Vestergaard-Knudsen et al., 2010). Studies have also attributed the out-of-pocket cost for hearing aids as a substantial barrier (Bainbridge & Ramachandran, 2014; Kochkin, 2000).

Cost as a barrier to hearing aid access may be an issue of particular importance in regions with high poverty, as low-income adults are less likely to report hearing aid use (Bainbridge & Ramachandran, 2014). Hearing aids can typically cost about \$2,000 each, possibly making them out of reach for individuals living at or below the poverty line. Arizona has one of the highest poverty rates in the United States (Bishaw & Fontenot, 2014). Using US Census data and epidemiologic studies, we estimate that there are approximately 1,145,166 adults over the age of 19 living with significant bilateral or unilateral hearing loss in Arizona. An estimated 204,984 of these individuals are living at or below the federal poverty line (Lin, Naparko, & Ferrucci, 2011; Bishaw & Fontenot, 2014, Muller et al., 2015, US Census). These numbers are particularly alarming, as there are limited resources to support adults with hearing loss in Arizona.

The aim of this study was to gather provider perspectives on the accessibility and affordability of hearing healthcare in Arizona. The long-term goal is to develop a state-

level initiative to increase hearing aid use among low-income adults. Based on previous research from the Hearing Aid Coalition, we hypothesized that Arizona providers would prefer a state-level plan that mirrors service coverage and reimbursement mechanisms of private insurance (Hearing Aid Coalition, 2004)

Audiologists and hearing instrument specialists were recruited via email to participate in focus groups and surveys. Three focus groups were held across the state in Phoenix, Flagstaff and Tucson (n = 26). The survey methodology included open and closed questions and was administered in paper-based and online versions (n = 77). Data were transcribed, coded, and analyzed using descriptive and basic regression analyses.

There was wide-ranging participation from providers across the state representing urban and rural practice locations (All 15 counties represented). Data revealed most providers would prefer to see changes in the current state of hearing access for low-income adults. Providers considered a number of factors to be important when developing and implementing changes to existing service delivery. These factors included a centralized entity to distribute referrals across practices and sufficient reimbursement for service providers. Common themes included the need for a balance between quality of care and expense as well as creating a fee-for-service component to invest the patient in the process. Increased philanthropic practice image and fair compensation were cited as the greatest motivations for provider participation. Survey results also indicated that most providers are already doing pro-bono work.

This study highlights that providers are willing to participate in state-level initiatives to improve hearing aid access. Ultimately, these results will inform policy makers of provider preferences for mechanisms of service-delivery and reimbursement.

This research is a collaborative project funded by the Arizona Commission for the Deaf and the Hard of Hearing.

CHAPTER 1: INTRODUCTION

Hearing loss is considered a major public health concern, as it is the third most common physical condition in adults (Yueh et al., 2003). Approximately 20 million adults report some degree of hearing impairment in the United States (Lin, Niparko, & Ferrucci, 2011). In the United States, hearing loss among adults primarily involves lesions along the cochlea, specifically the sensory hair cells. This type of hearing loss is commonly referred to as sensorineural and is a permanent type of hearing loss. Pathology along the auditory pathway has both qualitative and quantitative effects. Generally, individuals with hearing loss will report a perceived attenuation of sound, difficulties localizing sounds in their environment, and distortion of the speech signal.

Aside from the loss of audibility and clarity, hearing loss has been shown to have secondary impacts, including social isolation, frustration, dependence, and poor self-concept (Ciorbra et al., 2012). Depression is commonly associated with hearing loss. The individual has to adjust to the decrease in audibility and ability to communicate successfully or with ease. Communication difficulties can influence quality of life or relationships. The presence of background noise may further exacerbate the problem, as background noise may make understanding speech more effortful and difficult (Rudner, Ronnberg, & Lunner, 2011). Individuals with hearing loss tend to also report auditory fatigue. This is possibly due to the high cognitive demand that listeners with hearing loss have to employ, in order to understand the speaker (Hornsby, 2013; Arlinger, 2003)

Research has suggested that hearing loss may exacerbate or even accelerate the symptoms of cognitive decline in older adults, as damage to the auditory periphery may limit the flow of information to the brain. According to a study conducted by Lin and colleagues (2013), adults with hearing loss have a 24 percent increased risk for incident cognitive impairment and a 30-40% accelerated rate of cognitive decline, compared to adults with normal hearing.

Literature Review

Hearing aids can be utilized to restore audibility and even improve an individual's overall quality of life (Mulrow et al., 1990). Although amplification is an effective tool that can be used to ameliorate the effects of hearing loss, uptake is relatively low. It is estimated that only 20% of hearing impaired adults actually utilize amplification (Chien & Lin, 2012).

Physical discomfort and insufficient value have been cited as reasons for low uptake as well as low motivation, negative attitudes towards hearing aids, and lack of self-perceived handicap (McCormack & Fortnum, 2013; Vestergaard-Knudsen et al., 2010). Studies have also attributed the out-of-pocket cost for hearing aids as a substantial barrier (Bainbridge & Ramachandran, 2014; Kochkin, 2000).

Cost as a barrier to hearing aid access may be an issue of particular importance in regions with high poverty, as low-income adults are reported to be less likely to use hearing aids (Bainbridge & Ramachandran, 2014). Arizona has one of the highest poverty rates in the United States (Bishaw & Fontenot, 2014). Using US Census data and epidemiologic studies, we estimate that there are approximately 1,145,166 adults living

with hearing loss in Arizona. An estimated 204,984 of these individuals are living at or below the federal poverty line (\$11,670 for a 1-person household).

This study was conducted to gather provider perspectives on the accessibility and affordability of hearing healthcare in Arizona. The long-term goal of this research project is to develop a state-level initiative to increase hearing aid use among low-income adults. Community-based participatory research (CBPR) methods were employed to establish a partnership with providers who, in the future, may serve low-income Arizonans as part of a new statewide program. Involving providers and hearing healthcare administrators may encourage a feeling of investment, as providers were involved in the development process (Wallerstein & Duran, 2010). Previous research from the Hearing Aid Coalition suggested that Arizona providers would prefer a state-level plan that mirrors service coverage and reimbursement mechanisms of private insurance (Hearing Aid Coalition, 2004). We hypothesize Arizona Providers will still prefer this method of service delivery. This research was reviewed and approved by the Social and Behavioral Sciences division of the Human Subjects Protection Program at the University of Arizona.

CHAPTER 2: METHODOLOGY

Quantitative Data Collection (Surveys)

To garner perspectives regarding accessibility and affordability of hearing healthcare for low-income adults in Arizona, a mixed methods approach was used to gather provider perspectives regarding this topic. Community-based participatory research (CBPR) methods were employed to engage hearing healthcare providers in developing a statewide program. CBPR involves the democratization of knowledge creation by engaging the community of population of interest. Research implementing

CBPR methods can equate to organizational efficiency, promotion of power sharing, increased mutual trust, and sharing of objectives, knowledge, and skills (Masuda et al., 2011). CBPR is especially critical in the present study, as the primary stakeholders for the project are the providers who will be rehabilitating the patients. Providers possess vital knowledge on past and present efforts toward this issue, and they have firsthand knowledge of the challenges and capabilities of implementing programs in a clinical setting. Therefore, provider participation is not only vital for the development of the model but also the sustainability of the program.

For quantitative data analysis, Qualtrics, an online survey tool, was used to create and distribute the online survey to hearing healthcare providers in Arizona (Snow & Mann, 2012). The electronic survey and invitation to the focus groups were distributed to an email list of hearing healthcare providers in Arizona, which was provided by the Arizona Commission for the Deaf and the Hard of Hearing (ACDHH). ACDHH obtained the email contact information from the Arizona Department of Health Services, the agency that is responsible for licensing audiologists and hearing aid dispensers.

Prior to taking the online survey, a digital consent form was displayed and participants were informed that completion of the survey was voluntary. A short synopsis of the research project was also displayed to the subjects. After reading the Institutional Review Board (IRB) research disclosure, the participants were given a choice (by clicking on a button) to indicate whether they consent to taking the survey. If the participants indicated 'yes' they were directed to the survey. If 'no' was selected, the subjects were exited from the survey and redirected to the main page with a screen indicating that their participation was complete.

Paper-based surveys were distributed prior to each focus group as part of a packet that also included the IRB research consent form and meeting agenda. Participants were encouraged to complete the survey; however, completion was absolutely voluntary. The paper-based survey was also distributed at a conference for Hearing Instrument Specialists, in Phoenix, Arizona.

The online and paper surveys, for healthcare providers, were 29 questions in length. The survey questions were in an open and closed format. The survey collected information pertaining to the region and demographics where the providers practiced as well as their licensure and years of experience in the hearing healthcare field. Questions regarding factors that would either motivate or deter providers from participating in an affordable hearing healthcare program for low-income Arizonans were also asked.

Furthermore, providers were given a hypothetical model in which they had to indicate the appropriate amount of compensation that they would like to receive for participation in a new statewide program for low-income adults. Finally, providers were given an opportunity to write out their comments, suggestions, and concerns towards the end of the survey. Note that there was one question that was different between the paper-based surveys and online surveys. Because the online survey was not distributed until the cessation of the focus groups (to avoid potential biases), corrections were made to the online survey, as the researchers garnered more experience and information from the group meetings. Instead of asking the question, ‘Would you be willing to be a provider for a statewide program to increase access for low-income adults in Arizona?’, the electronic survey asked, ‘Do you feel there is a need to improve the accessibility and affordability of hearing healthcare for low-income adults in Arizona?’ Rephrasing the

question would allow better insight into whether the Provider perceives a need for change, rather than their role and power to implement this program in their own clinic. Only completed surveys by participants who indicated they had never taken the survey were included in the data analysis.

Qualitative Data Collection (Focus Groups)

Three focus groups held across the state of Arizona provided qualitative data. The attendees included hearing healthcare providers (i.e., hearing instrument specialists and audiologists) and administrative hearing healthcare personnel. Table 1 below summarizes the date, location, and number of attendees at each meeting.

Table 1: Focus group location, date and number of attendees.

Tucson (07/09/2014)	Phoenix (07/11/2014)	Flagstaff (08/15/2014)
<p>When/Where: 4:00pm-6:00pm</p> <p>The University of Arizona Speech, Language, and Hearing Sciences Building</p> <p>P.O. Box 210071 Tucson, AZ 85721-0071</p>	<p>When/Where: 4:00pm-6:00pm</p> <p>Arizona Commission for the Deaf and Hard of Hearing</p> <p>100 N 15th Ave, Suite 104Phoenix, AZ 85007</p>	<p>When/Where: 4:00-6:00pm</p> <p>Northern Arizona University Student Union</p> <p>PO Box 5670 Flagstaff, AZ 86001</p>
<p>Number of Attendees: 11</p>	<p>Number of Attendees: 9</p>	<p>Number of Attendees: 6</p>

At the beginning of each focus group, participants were informed that answers were completely voluntary. The attendees were also given a packet before to each

discussion. The packet consisted of the paper-based survey, which also stated that participation was completely voluntary. The IRB research disclosure and meeting agenda were also in the packet that was given to all participants.

Meeting facilitators began each focus group with a short introduction of the study and a preamble about confidentiality, consent, and purpose. Questions directed at participants explored current and available hearing healthcare resources, and barriers contributing to low hearing aid uptake. Furthermore, strategies highlighting ways providers could improve accessibility, under a hypothetical model were addressed. Questions directed at the participants explored what their preference for compensation and infrastructure under the aforementioned hypothetical models would be.

Focus groups discussions were recorded using a tape recorder and were later transcribed verbatim using the Express Scribe program and accompanying foot pedal. Transcription data was de-identified at this time. Transcriptions were also uploaded into the N-Vivo 10 QSR-International software. Using thematic analysis, two-academic partners coded the focus group discussion using the N-Vivo software. After the academic partners finished coding, a meeting was conducted to discuss the nodes and sub-nodes assigned to focus group data. An inter-rater agreement of at least 80% was reached before data were accepted for analysis (Knudsen et al., 2012). A conceptual map based on the providers perspectives, experiences, and comments was created to navigate and organize the themes from the focus groups. The themes were modeled after the different tiers of the Socio-Ecological Model (SEM) and questions posed to the focus group participants.

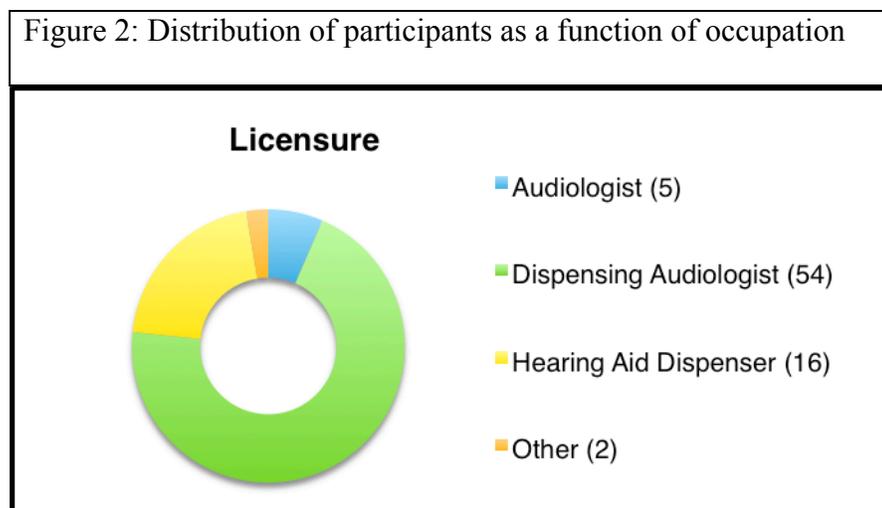
Themes, also characterized as nodes in the N-Vivo software, were later transcribed in details using sub-nodes. Nodes and sub-nodes were refined for coding by

looking through initial transcript data from the focus groups. The SEM was considered an appropriate model to analyze the various interactions of intra-personal, inter-personal, organizational, community, and societal factors and their impact on the accessibility and affordability of hearing aids for low-income Arizonans. The SEM considers the interplay between the individual with hearing loss, their relationships, community, and society.

CHAPTER 3: RESULTS AND DISCUSSION

Quantitative Data

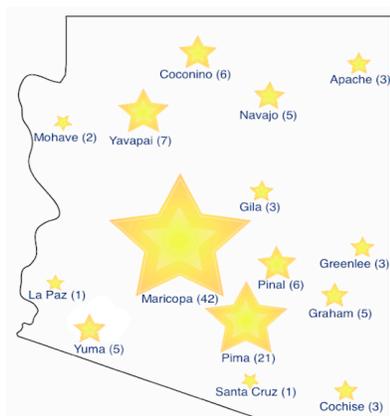
There were a total of 125 (104-web based attempts, 21 returned and completed paper-based surveys) partially and fully completed surveys. A total of 3 surveys were unusable, as the respondents indicated they were not providers. Additionally, 45 surveys were removed from analysis because respondents did not complete the surveys or they indicated that they had taken the survey before. Therefore, 77 completed surveys were analyzed, yielding an overall response rate of 15%. Participants were primarily licensed dispensing audiologists. See Figure 2.



A majority (54%) of participants had less than 20 years of experience in the field of hearing healthcare, while the remaining participants (46%) had more than 20 years of

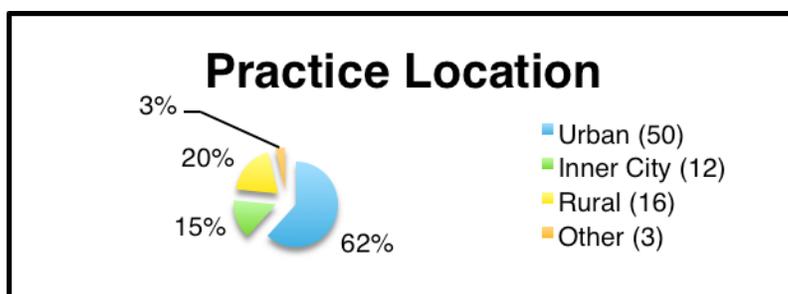
experience. In addition, the survey results indicated that there was representation across all Arizona counties. Several participants practiced in numerous counties, as they traveled throughout the listed counties as part of their jobs. Figure 3 illustrates the number of participants as a function of county served.

Figure 3: Proportion of survey participants from various Arizona counties



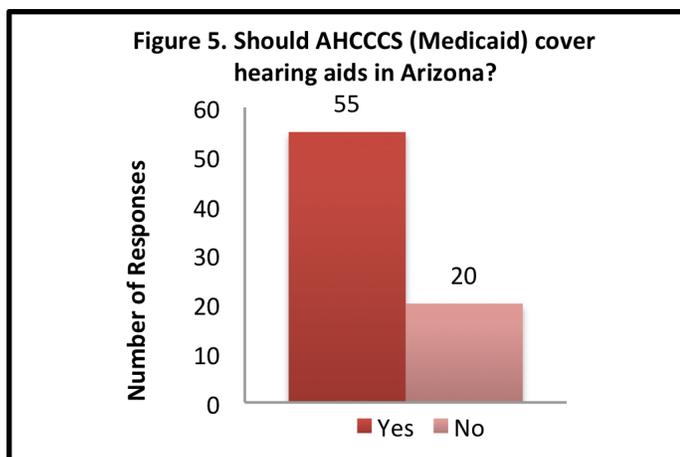
Survey results indicated that the majority of providers who responded practiced in an urban setting, as illustrated in figure 4. Additionally, a portion of providers practiced in more than one setting (e.g., urban and rural).

Figure 4: Survey participants grouped by practice location

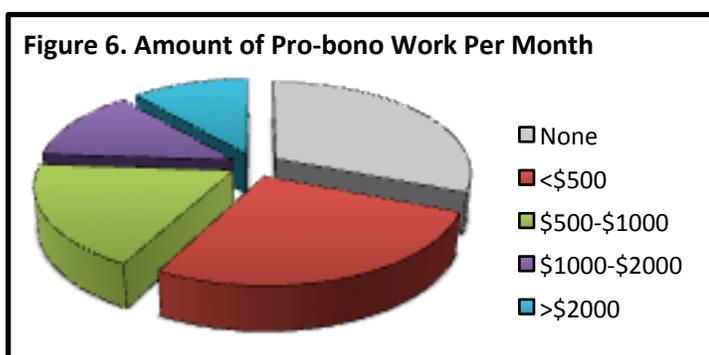


Based on survey results, nearly every participant (95%) indicated that there is a need to improve the accessibility and affordability of hearing healthcare. Figure 5

demonstrates that the majority of providers (71%) indicated that AHCCCs should cover hearing aids for low-income adults.

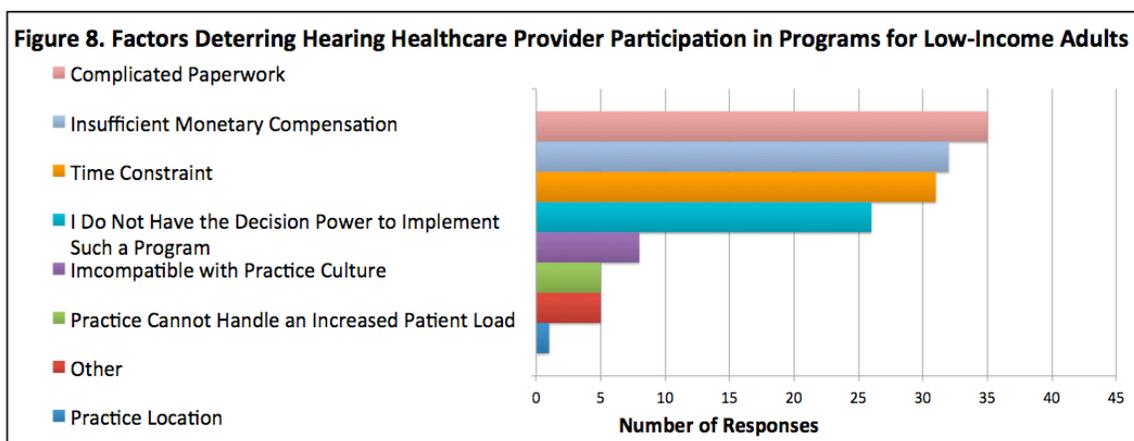
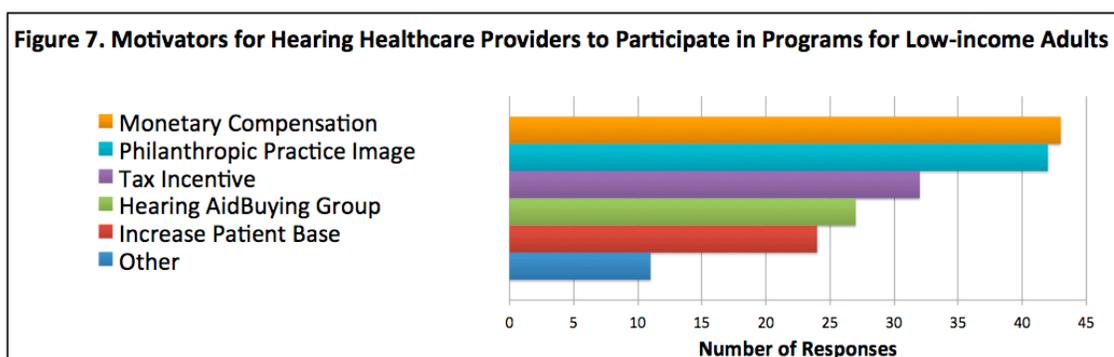


The majority (70%) of the survey participants, who answered this question, already provide some kind of pro-bono work (Figure 6). Pro-bono work involved participation in programs such as the HEAR Now program, Starkey Foundation, Ear Foundation, Hear2Assist, CHAP, Hear for Kids, Ear Foundation, and Special Olympics. Furthermore, pro-bono work also involved hearing services that ranged from cerumen management to fitting and refurbishing donated amplification. Participants also listed hearing aid cleanings, re-tubing, and adjustments as pro-bono work currently provided.

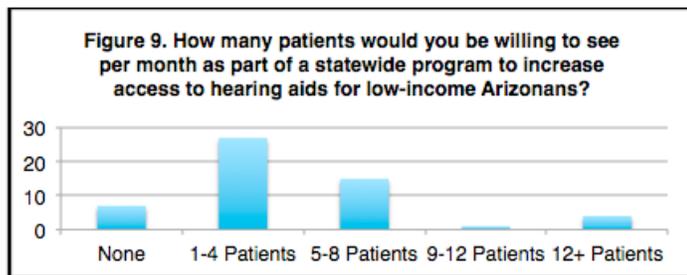


Providers were asked to select motivators and deterrents from a list of items that would potentially lead to their participation in a program that provides low-income adults

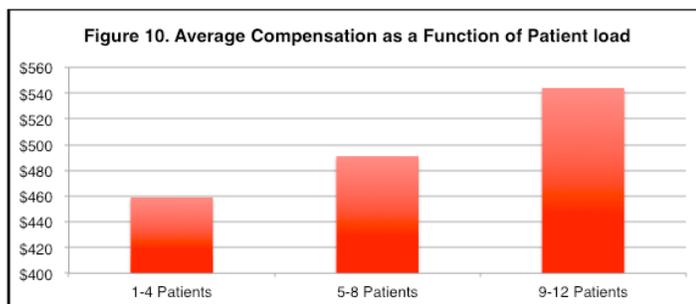
access to hearing healthcare. Figure 7 below illustrates the motivators and Figure 8 shows the barriers that providers believed would deter them from participation. Providers were most motivated to participate if monetary compensation, philanthropic practice image, and tax incentives were available. In contrast, complicated paperwork, insufficient monetary compensation, and time constraints were most likely to deter Providers from participating.



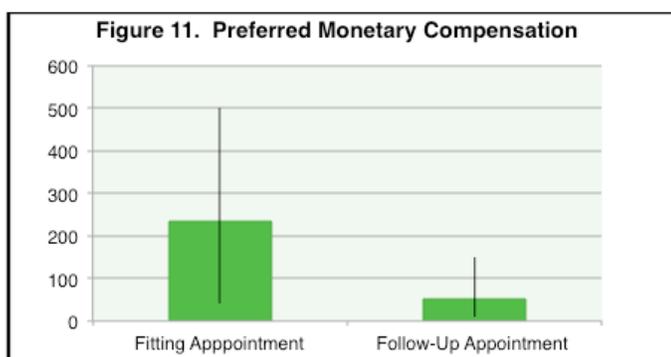
Providers were also asked to select from a list, the number of patients they would be willing to see. The majority of providers indicated that they were willing to see approximately 1-4 patients per month, as part of a program serving low-income adults in Arizona (Figure 9).



In addition to selecting the patient load, providers were asked to manually type in the amount of compensation they would like to receive for their participation. Figure 10 categorizes how much providers prefer to be compensated as a function of patient load.



Furthermore, providers were asked how much they would like to be compensated for performing a fitting and follow-up appointment (Figure 11). A tremendous amount of variability was seen in these responses. For a hearing aid fitting appointment, the average amount of compensation, as indicated by providers, was \$233. The responses ranged between \$40 up to \$500. Additionally, providers indicated a wide range for a hearing aid follow-up appointment. Responses for the previous question ranged from \$10 to \$150.



Finally, providers were asked to rank their preferences for approaches to increase the accessibility and affordability of hearing aids, where 1 = most preferred (best idea) and 8 = least preferred (worst idea). Figure 12 below indicates the results. Providers who decided to answer this question selected the ‘Hearing Aid Tax Credit’ option as the 1st preferred method, most often. In contrast, ‘No Change from the Current System’ was selected most often as the worst idea.

Figure 12: Provider preferences to increase affordability and accessibility

#	Answer	1	2	3	4	5	6	7	8	Total Responses
1	Hearing Aid Tax Credit	16	8	15	10	6	0	0	1	56
2	Pro nono care by a network of providers	1	6	1	15	16	9	6	2	56
3	Sliding fee scale program (income-based, discounted fees for services)	10	12	23	7	4	0	0	0	56
4	AHCCCS (Medicaid)	12	15	11	8	5	3	1	1	56
5	Medicare Coverage	15	11	6	10	7	3	4	0	56
6	Direct-to-consumer sales of hearing aids	2	3	0	2	5	19	16	9	56
7	Self-fitting hearing aids/ Personal sound amplification products	0	0	0	1	6	6	24	19	56
8	No change from current system	0	1	0	3	7	16	5	24	56
Total Responses		56	56	56	56	56	56	56	56	56

Qualitative Data

Using quantitative content analysis methods, themes from the focus groups were coded to reveal the opinions of the participants. Table 13 describes the themes (i.e., nodes and subnodes) that were used as a conceptual map to code the data.

Table 2: Attributes, dimensions and definitions of provider opinions

Attributes (Nodes)	Dimensions (Sub-Nodes)	Definitions
<i>Accessibility of Care</i>	Transportation Insurance coverage Location of services Availability of providers Cost of services Cost of devices Provider referral follow-through Knowledge of available services Available low-cost programs Coordination of care Community awareness	External community, organizational, and societal factors that may influence the accessibility of hearing healthcare
<i>Patient-Oriented Attributes</i>	Family-centered care Whole-person care Quality of clinical care Awareness of education	Intrapersonal factors that may influence the accessibility and affordability of hearing healthcare
<i>Clinical Practice Attributes</i>	Provider orientation Philosophy of care Cultural competency Outreach Equity	Organizational factors related to the clinical care that may influence the affordability and accessibility of hearing healthcare
<i>Healthcare Policy</i>	Federal-level State-level (Arizona) Other states and countries	Legislation that may influence the affordability and accessibility of hearing healthcare
<i>Providers Needs for System Performance</i>	Efficiency Availability Accountability Information management System Integration Requirements for patients Active role of patient Monitoring and follow-up Benefits of participation Motivation to participate Comprehensiveness of services Strategic resource placement Increase visibility	Preferences and needs for participation in program to increase the affordability and accessibility of hearing healthcare

Below are themes discussed as well as a synopsis regarding the input received from the participants.

1) Clinical Practice Attributes:

Most participants who attended focus groups were already providing pro-bono or reduced-fee services to low-income Arizonans. The services included fitting refurbished hearing aids, hearing aid cleanings and follow-up appointments, as well as hearing aid consultations. Overall, the philosophy of care expressed was that hearing healthcare should be accessible to anyone who needs it, regardless of income. One provider indicated the following belief during the focus group meeting:

Participant: “I would like to not see any further fragmentation of healthcare and I would like to see all of us rather than them. Because we are really dividing people up into treating people differently that have no money versus a little bit versus enough money versus a lot of money, and I would really like to see that evened out. I think everybody deserves to have quality healthcare and they all deserve to have the same access to quality hearing healthcare. And the person who makes slightly more than the 150% poverty also needs to have aural rehabilitation and they need to have quality hearing aids, even if they are not getting any help or they need help.”

Providers varied in knowledge of resources for low-income adults. Often times, providers indicated that they were unsure of the resources; therefore, they did not know what they could do for the patient. The following resources for low-income patients were discussed during the focus groups; EPIC, Audient, Starkey HearNow, Ear Foundation, The Sertoma Hearing Aid Bank, Hear2Assist, Northern Arizona University Aural Rehabilitation, Lions Affordable Hearing Aid Project, Veterans Administration (for veterans only), and practice specific pro-bono programs.

Finally, in order to serve the low-income population efficiently and appropriately, providers expressed a need for a statewide information exchange on available programs and eligibility criteria. This would allow providers to refer the patients to the appropriate programs without having to complete a comprehensive search. Essentially, the majority of providers believed that hearing healthcare should be accessible to everyone who needs it; however, they have encountered times when they were unsure of the resources available for this specific population.

2) Patient-Oriented Attributes:

Providers believed that low-income patients needed more education regarding hearing device maintenance and their hearing loss. The low-income population was thought to need more guidance in terms of investing in their hearing healthcare, as financial investment may be difficult for this population. Variables such as educational level and other comorbid conditions may prevent patients from seeking help for their hearing loss. Patients believed patients might hesitate before pursuing amplification because the financial investment may be too risky, especially if precise benefit cannot always be predicted. A participant made the following statement during a focus group meeting that addressed this topic:

Participant: “Aside from the money, which is real for the patient, the client, is their reluctance because they are not sure it’s (amplification) going to work for them to pay the money? That part of the mix? Because sometimes you go into people’s houses, people who don’t have a lot of money and you see other electronics. Is there some reluctance to contribute to something that they are not sure would work for them? That is education.”

Individual patient factors such as social networks, employment, cognitive status, and financial resources (e.g., income and transportation) were described as considerations

for developing a program or when prescribing hearing devices. This sentiment was echoed in a comment by one of the participants who attended the focus groups:

Participant: “Perhaps we should be thinking more of cost effective amplification. Their lifestyle, then that makes it more complicated, though. Then you’re being judged to say, you don’t qualify for hearing aids, we’re going to put \$75 Williams sound amplifier with earphones. I think there is a need for it somehow to figure out there are situations when an amplifier headphone is going to be used more than a pair of hearing aids.”

Essentially, the majority of providers believed that a holistic approach, including an educational component, should be considered when implementing a statewide program for low-income adults.

3) Accessibility of Care:

Transportation, affordability of amplification, knowledge about hearing loss, and acceptance of hearing loss were factors that providers believed would impact access to care. Because Arizona has many residents who live in the outskirts of various cities, transportation to a clinic to obtain hearing healthcare may be an issue. Furthermore, intrapersonal factors such as acceptance and understanding of hearing loss and amplification may inhibit the accessibility of hearing healthcare, as well as their help-seeking behavior and decisions.

Provider’s knowledge of resources was also discussed as a barrier to healthcare access. Hearing healthcare Providers admitted to several occasions in clinic when they were unsure what resources were available for the low-income population. Lack of community awareness was also seen as a barrier for the patients. Primary care physicians and other referring physicians were seen as unknowledgeable about hearing loss

including the long-term impacts of this condition. The lack of Physician awareness may influence how the patient views their hearing loss. Additionally, community awareness can relate to how legislation is implemented. If hearing loss is not seen as a priority, it is unlikely that the interventions (e.g., amplification) will be easily accessible, as lawmakers may be naïve or unaware of the importance of rehabilitation. A provider expressed the following experience with the government:

Participant: “We’re doing a bad job as an industry, telling people and the general public about the impact of hearing loss. When I talk to Congress every year, they cannot believe the things I am saying. I tell them you can save money on anxiety, depression, and like a million things, but they don’t know, and they don’t believe me, it’s a constant thing. “

Some providers indicated that they have encountered patients that they were unable to help because they did not know certain programs for low-income adults existed. Combined, these factors may inhibit the accessibility of care for the low-income population.

4) Provider Needs for System Performance:

Providers described interest in a centralized program to increase efficiency and decrease paperwork. Prior to seeing each patient, providers preferred that the qualification process have been conducted through the aforementioned centralized system. Participants discussed preference for a centralized system as a means to access confidential patient data and for scheduling, as this would be more efficient than current philanthropic and non-philanthropic programs (i.e., HEAR Now program, Starkey Foundation, Ear Foundation, Hear2Assist, CHAP, Hear for Kids, Ear Foundation, and Special Olympics). This would allow the clinician to have more time with the patient.

Participant: “I think the biggest barrier for me is, do I have the time to go through and verify somebody’s income and check to make sure their insurance doesn’t cover hearing aids. A centralized process where I can say, ‘I would like you to go to this office or website and see if you qualify.’ That would be the biggest motivation for me to participate.”

Overall, there was a preference for offering new devices and an option to fit a patient with an assistive listening device or hearing aid. Providers who have had experiences with used devices found that they are burdened with the task of learning how to program the used device. Furthermore, a preference for new devices was discussed as an ideal option due to the fact that each digital hearing aid manufacture has their own platform to fit and program the hearing aids. This may be problematic if the provider does not have the platform (software/devices) to program the used hearing aid that they are asked to fit it.

Participant: “A new hearing aid is easier to fit, a lot less issues down the road. You can’t say enough good things about a new fitting. Even entry level hearing aids would be better than (refurbished hearing aids).”

During the focus group meetings a holistic approach was encouraged by providers, as the target population may obtain greater benefit from the device.

Participant: “I think that to go along with the holistic approach, you cannot just focus on the device and when you start talking about success and acceptance and about any of these things, you must, in an ideal program, add a rehabilitation component or an education component because if you don’t, you are still going to end up with people who say, I hate this thing, and I am going to leave it in the drawer.”

Because the low-income population may be more limited in their ability to access resources for hearing healthcare, providers felt that bringing the information and educational component to the patient is best. A centralized aural rehabilitation (AR)

program was suggested as the best way to approach this issue. AR will be more accessible to potential patients through a centralized program because a limited number of clinics implement AR in their clinical practice.

Providers expressed interest in having patient “buy-in.” More specifically, providers felt that beneficiaries of the hypothetical model should be partially responsible for the monetary cost of the device, as this would likely increase ownership value and overall utilization of the device. Clinicians with experience working with low-income individuals expressed a preference for patient buy-in, as the patient is likely to be more accountable for the maintenance of their device, and their hearing health (i.e., follow through with future audiologic appointments) if some cost is involved.

Participant: “I think one of the historical situations that I have run into is that if people don’t pay for it, they do not take care of it.”

The ability to “trade-up” devices was expressed. Providers felt that the patient should have an option to invest in better amplification technology should they want to do so.

Participant: “Maybe we can have that in the model if they wanted to add x number of dollars to the base rate hearing aid if they were still employed or volunteering. or doing something where they were around a lot of noise.”

Sufficient monetary compensation for the provider was a theme that resonated across every discussion group. Pro-bono work was not seen as an acceptable foundation for the new statewide models. Participants expressed the importance of fair monetary compensation across providers (i.e., audiologist versus hearing instrument specialist) and

across different regions in Arizona. One participant voiced the following concern during a focus group meeting:

Participant: “So if certain people say they would want x amount for this service, other people say we I would want y amount, And x is less than y, are you going to just steer people who say x amount?”

Finally, providers preferred a fixed number of patients. Many of the participants who attended the meeting indicated that they were practicing in busy clinics; therefore, an increase in patient load as a result of participation in the program must be integrated into their existing patient load. In addition, there may be some providers who may have more low-income patients who need their services because they are the only provider in their city or because there are a lot more patients living near their practice. One provider indicated the following concern regarding participation in a new statewide program for low-income adults:

Participant: “I am thinking about the locations. For example, Sierra Vista, there may be one provider in a very economically deprived environment and that provider would be overburdened.”

To address this issue providers believed a centralized program should monitor and disperse the patients to the clinics appropriately. This centralized program would be responsible for referring and controlling the number of patients per provider.

5) Healthcare Policy:

Providers perceived healthcare policy as a barrier to accessing hearing healthcare, as neither Medicaid nor Medicare cover hearing aids in Arizona. Several providers indicated that Medicaid should cover hearing aids. Medicaid covering amplification would promote a centralized program, which would control the administrative burden of client application verification. Furthermore, Medicaid recipients with hearing loss would

benefit from access to transportation (Medicaid has a transportation program for their recipients).

Participant: "I think also one benefit of having AHCCCS (Medicaid) involved, a lot of our patients just getting to the appointment is the biggest part of it. AHCCCS will pay for transportation if I'm billing AHCCCS for the visit."

With current healthcare reforms, providers expressed they were unfamiliar with new healthcare policies. More specifically, participants were unclear whether the Affordable Care Act would allow the low-income population better access to hearing healthcare. Some providers described positive work experiences in other states and countries with legislation supporting hearing aid provision.

Discussion

Based on epidemiologic data, an estimated 204,984 Arizonans, living at or below the poverty line, have unilateral or bilateral hearing loss (Lin, Naparko, & Ferrucci, 2011; Bishaw & Fontenot, 2014). We employed a community participatory-based research (CBPR) approach to engage providers in our research project and to gain their perspective regarding the current state of hearing healthcare in Arizona, with the end goal of developing a statewide hearing aid program for low-income Arizonan adults. Our methodology for data collection involved a mixed methods approach, as surveys (online and paper-based) and focus groups were utilized to obtain information regarding this topic. Involving the stakeholders (i.e., providers) in the development process could lead to a sense of ownership and investment towards the statewide program. This could lead to participation from providers in the future, if the program is implemented.

Data from the survey and focus group meetings complimented each other. The survey allowed us to look at providers' preferences in a quantitative manner (e.g., preferred amount of monetary compensation), whereas, the focus group meetings enabled us to hear their narratives (i.e., experiences, preferences, and concerns). Providers expressed the following information on the survey and during the focus group meetings.

The need for change from the current status of hearing healthcare for low-income adults was expressed. A majority of survey respondents favored introducing hearing aid coverage by Arizona Health Care Cost Containment System (Arizona's Medicaid system). Furthermore, hearing healthcare coverage by Arizona Health Care Cost Containment System (AHCCCS) would allow patients to utilize the benefits of coverage by Medicaid in Arizona (i.e., transportation services to get to the appointments). Furthermore, the inclusion of hearing healthcare benefits for adults through AHCCCS would entail the new program being overseen by a centralized state agency. This would be beneficial, as most individuals who qualify for AHCCCS are living close to or below the poverty line; therefore, the work of verifying and identifying whether patients qualify for benefits will already be done by the state, and not by the hearing healthcare providers, thus decreasing the administrative burden for the providers.

An aural rehabilitation and education component was strongly emphasized across the state at all focus groups. Providers believed that programs designed for low-income individuals should implement a holistic approach. Patients living below the poverty line may face additional challenges and barriers when accessing hearing healthcare. As a result, providers need to effectively assess these barriers and patient characteristics when prescribing amplification devices. Participants of the focus group meetings suggested

allowing a choice between assistive listening devices and hearing aids. They expressed that hearing aids may not be appropriate for everyone, and as a result, a device such as a pocket talker may be more appropriate and beneficial to the patient. Finally, an aural rehabilitation component would allow the new statewide program to provide an educational component for the patients who need it. Generally, providers believed that low-income patients needed more counseling regarding their hearing loss and devices. Several providers recommended a centralized aural rehabilitation program to allow patients to access this resource.

Across all focus group meetings, participants emphasized the need for “patient buy-in.” Specifically, providers felt patients needed to pay for a small portion of services or of the device. Based on previous experience, providers believed that patients take better care of the device if they are required to pay for a portion of it. Because the patients have monetary investment in the device, providers believed that the patients would be more likely to show up for their appointments and take responsibility for their hearing health.

Providers considered several factors to be important when implementing change in service delivery programs. These factors included making provider participation as easy and efficient as possible. Providers expressed that they were already busy in their clinics, and by decreasing the administrative burden associated with participation in the new statewide program, they would be more willing to participate. Suggestions included creating a statewide resource for referral and verification of patient financial information and limiting administrative burden. Participants expressed that a statewide program would also monitor and distribute the patient load across providers more appropriately

(i.e., fixed patient load). Furthermore, providers believed that they should be compensated for their work. Although a majority of the providers who participated in our research were already providing pro-bono work, participants indicated that monetary compensation is necessary, should this program be implemented at a statewide level and be sustainable. While emails were sent to every registered hearing healthcare provider in Arizona, it is fully recognized that a response bias may have been present. Providers who are for the improvement of hearing healthcare for low-income individuals were the majority of participants who responded.

Future Direction

Efforts were made to obtain perspectives from the across the state of Arizona. While we gathered responses from hearing healthcare providers serving every county, the overall response rate was relatively low (15%). Future efforts could utilize additional recruitment methods and evaluate non-respondent bias. A possible recruitment method could be implemented by the Arizona Department of Health services. While providers are renewing their licensure and obtaining their licensure for the first time, this survey could be given to them, as this may be more convenient for the providers. Furthermore, a survey looking at the consumer perspective may be helpful when developing a statewide program, as they will be the primary beneficiaries of this program. Finally, future research could focus on examining the provider's perspective through the socio-ecological model framework, in order to gain insight regarding the barriers that the low-income Arizonans face when attempting to access hearing healthcare.

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